

Notes on *Argyrolobium* (Fabaceae) in South Africa

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The taxonomy of *A. speciosum* Eckl. & Zeyh. and its close allies, from the eastern parts of South Africa, is revised. A new species, *A. robustum* T.J. Edwards, is described. This taxon is closely allied to *A. speciosum* but is allopatric and morphologically distinct. The description of *A. baptisioides* (E.Mey.) Walp. is amended to embrace *A. sutherlandii* Harv. and *A. sandersonii* Harv. which are considered conspecific.

Keywords: *Argyrolobium*, Fabaceae, new species, South Africa, taxonomy.

Introduction

The genus *Argyrolobium* includes many species which are indistinguishable using floral characters and consequently vegetative features are important in species delimitation. This paper deals with a group of closely allied suffrutescent species (series *Racemosae sensu* Harv.) from the eastern parts of South Africa, which emphasise this point. *A. baptisioides* (E.Mey.) Walp., *A. longifolium* (Meisn.) Walp., *A. sandersonii* Harv., *A. speciosum* Eckl. & Zeyh. and *A. sutherlandii* Harv. form a natural group unified by their annual aerial parts, large subterranean lignotubers and propensity to turn black on drying. A revision of the group reveals that *A. baptisioides*, *A. sandersonii* and *A. sutherlandii* are conspecific and that *A. speciosum* includes two distinct entities which are divided by the Kaffraria Interval (Weimarck 1941).

1. *Argyrolobium speciosum* Eckl. & Zeyh. Enum. Pl. Afr. Austr. 2: 187 (1836); Walp.: 506 (1839); Walp.: 630 (1843); Harv.: 68 (1862). Type: Winterberg near Phillipstown, *Ecklon & Zeyher 1320* (K!, lecto. selected here; C!, G!, MO!, NY!, O!, P!, S!, TCD!, isolecto.).

Chasmone diversifolia E.Mey.: 71 (1836). Types: in grassland, Katberg 3000–3500', *Drège s.n.* (P!, lecto. selected here; G!, PRE!, S!, TCD!, isolecto.); between Zandplaas and Komga 2400', *Drège s.n.* (P!, syn.).
Incorrectly as *Chasmone heterophylla* in Harv.: 68 (1862).

Herb 0.15–0.30 m tall, erect, sparingly branched; stems annual, cylindrical in section, pilose, becoming glabrous. *Leaves* glaucous, slightly fleshy, glabrescent but often abaxially sericeous when young; leaflets narrowly to broadly obovate or elliptical, 30–70 × 15–20 mm, apex rounded or acute; petioles 5–26 mm long, canaliculate; stipules often abaxially sericeous at first, trapezoid, base broadly cuneate, apex acute. *Inflorescence* racemose, 2–25-flowered, up to 270 mm tall, terminal, rarely becoming leaf-opposed; peduncle 50–220 mm, glabrescent, sericeous or pilose; bracts linear, 6–15 × 0.7–1.2 mm, bracteoles setaceous, 2–3 × 0.5 mm. *Calyx* sparsely to densely sericeous, lateral sinuses 7–10 mm; upper lip 8–12 mm long, lobes acute, 3–9 × 1.7–2.0 mm; lower lip 8–13 mm long, lobes acute, 1.5–5.0 × 0.7–2.0 mm. *Corolla* bright to mustard-yellow, standard veins red; standard lamina suborbicular, 7–13 × (6–)11–13 mm, adaxial surface sparsely sericeous centrally, claw 2.5–4.0 mm long; wing laminae obovate to slightly cymbiform, 8–11 × 3–6 mm, with lunate-lamellate sculpturing in the upper basal and upper central zones, claw 2.0–3.5 mm long. *Fruit* linear, compressed, erect, sparsely sericeous, 60–85 mm long. *Seed* irregular to suborbicular, compressed, 2–3 mm, sometimes recalcitrant, testa light brown, hilum slightly raised.

Diagnostic characters discussed under *A. robustum*.

Selected specimens

Without precise locality: *Barber s.n.* (TCD).

—**3226** (Fort Beaufort): Winterberg near Phillipstown, (–AC), *Ecklon & Zeyher 1320* (C, G, MO, NY, O, P, S, SAM, TCD); *Barber 46* (TCD); Kouga Mountains, (–CA), *Fitchett 5008* (PRE); Katberg, (–DA), *Drège s.n.* (BM, G, P, PRE, S, SAM, TCD); *Ecklon & Zeyher s.n.* (SAM); Gaika's Kop, (–DB), *Phillipson & Hutchings 50* (KEI, MO, PRE, UFH).

—**3227** (Stutterheim): Happy Valley, Cathcart, (–AC), *Barker 900* (BOL, NBG); Fort Cunynghame, (–AD), *Schonland 89* (GRA); Keiskayma Hoek [Keiskammahock], Cato Forest Reserve, (–CA), *Story 3337* (PRE); Evelyn Valley, (–CB), *Taylor 4226* (NBG); Pirie Forest, King Williams Town, (–CD), *Flanagan 2198* (GRA, MO, PRE, SAM); between Zandplaas and Komga, (–DB), *Drège s.n.* (P).

—**3228** (Butterworth): Kentani, (–AD), *Pegler 121* (PRE).

2. *Argyrolobium robustum* T.J. Edwards sp. nov. differt a specie *A. specioso* foliis magnis, habitu robusto, inflorescentiis multifloris.

TYPUS. —Eastern Transvaal: Barberton, *Thoracraft 19158* (PRE!, holotypus; BOL!, C!, GRA!, J!, M!, SAM!, UPS!, isotypi).

Herbaceous suffrutex, 0.30–0.75 m tall, erect, sparingly branched; stems annual, triangular in section, pilose, becoming glabrous. *Leaves* glaucous, slightly fleshy, glabrescent but often abaxially sericeous when young; leaflets narrowly to broadly obovate or elliptical, 50–170 × 20–80 mm, apex rounded or acute; petioles 15–40 mm long, canaliculate; stipules often abaxially sericeous at first, trapezoid, base broadly cuneate, apex acute. *Inflorescence* racemose, 20–62-flowered, up to 400 mm tall, terminal, rarely becoming leaf-opposed; peduncle 10–100 mm, glabrescent, sericeous or pilose; bracts linear, 6–15 × 0.5–1.5 mm, bracteoles setaceous, 2–3 × 0.5 mm. *Calyx* sparsely to densely sericeous, lateral sinuses 7–10 mm; upper lip 8–12 mm long, lobes acute, 3–9 × 1.5–2.0 mm; lower lip 8–13 mm long, lobes acute, 1.5–5.0 × 0.5–2.0 mm. *Corolla* bright to mustard-yellow, standard veins red; standard lamina suborbicular, 7–13 × (6–)11–13 mm, adaxial surface sparsely sericeous centrally, claw 2.5–4.0 mm long; wing laminae obovate to slightly cymbiform, 8–11 × 3–6 mm, with lunate-lamellate sculpturing in the upper basal and upper central zones, claw 2.0–3.5 mm long. *Fruit* linear, compressed, erect, sparsely sericeous, 60–85 mm long. *Seed* irregular to suborbicular, compressed, 2–3 mm, sometimes recalcitrant, testa light brown, hilum slightly raised (Figure 1).

A. robustum is closely allied to *A. speciosum*, but is a tall species with large leaflets and reduced petioles. *A. speciosum* is limited to the Eastern Cape and has short, lower internodes and thus its leaves occur in basal clusters. The leaflets are both shorter and narrower than those of *A. robustum*. In addition, plants of *A. spe-*

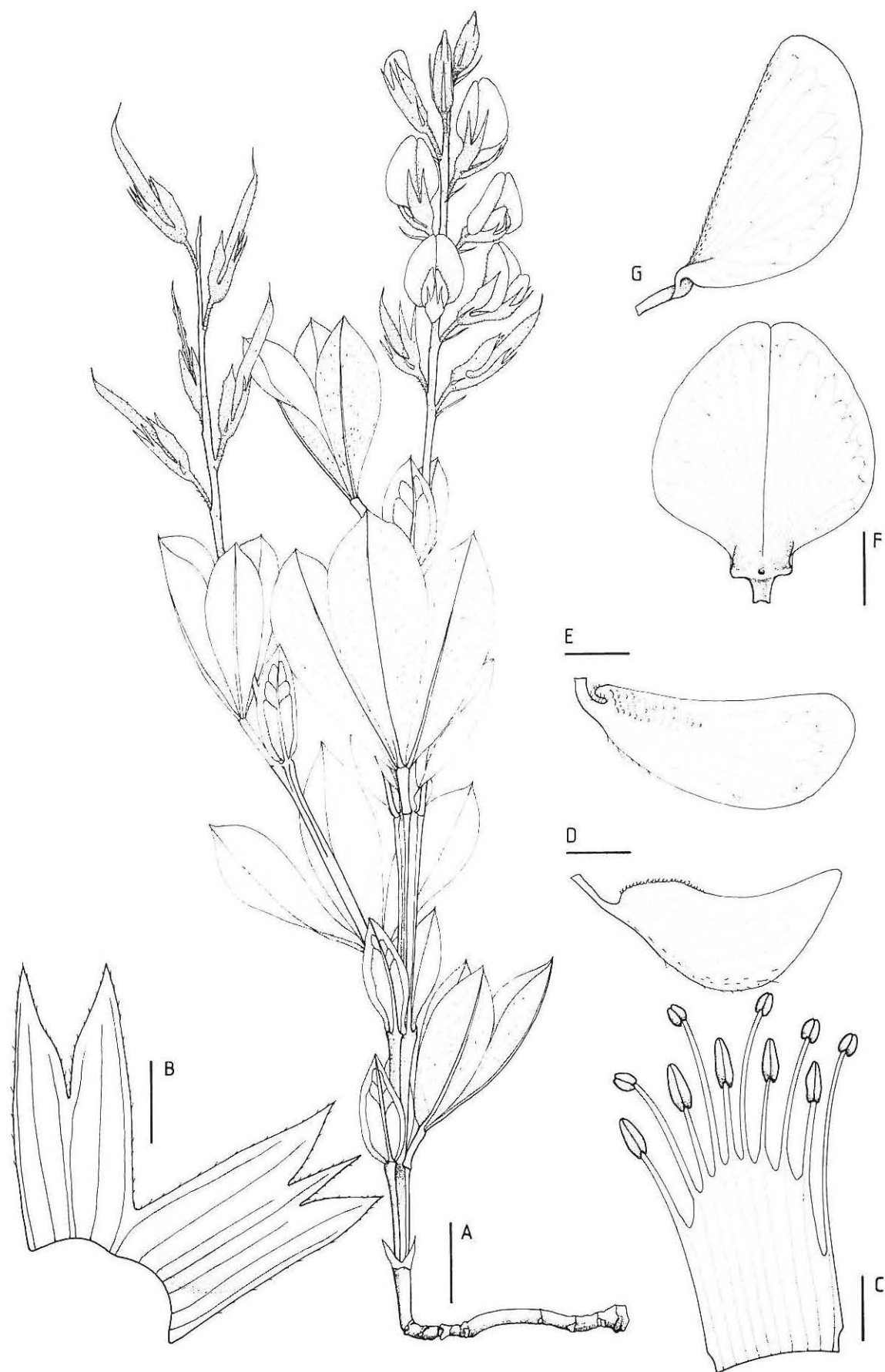


Figure 1 *Argyrolobium robustum*. A. Habit (bar = 20 mm); B. calyx (bar = 3 mm); C. androecium (bar = 3 mm); D. keel (bar = 3 mm); E. wing (bar = 3 mm); F. standard (bar = 3 mm); G. standard, lateral view (bar = 3 mm). Voucher: *Edwards 575*.

ciosum are smaller and much less floriferous than *A. robustum*. A correlated trend occurs in the peduncle development which is accentuated in *A. speciosum* allowing its flowers to be held above the surrounding vegetation despite its reduced vegetative stature (Figure 2). A strong tendency towards leaf dimorphism is also apparent in *A. speciosum*, with broad lower leaflets and narrow upper leaflets. *A. speciosum* and *A. robustum* are sister species divided geographically by the Kaffraria Interval (discussed in more detail under *A. baptisioides*) (Figure 3). The discontinuity of vegetative characters indicates considerable divergence and the taxa are therefore attributed separate species status.

A. robustum occurs commonly in Highland Sourveld, Dohne Sourveld and Ngongoni Veld (Figure 3).

Selected specimens

Without precise locality: *Cooper 1064* (BOL, TCD); *Tugela, Gerrard & McKen 1758 & 1759* (TCD); *Between Umgeni and York, Gerrard & McKen 2123* (TCD); *Swaziland, Stewart 8860* (PRE); *Cooper 116* (BM, SAM, TCD).

—2426 (Mochudi): Mochudi, (—AA), *Harbour 6507* (BOL).

—2430 (Pilgrims Rest): Mt. Sheba Nature Reserve, (—DC), *Kerfoot s.n.* (J); *Graskop, (—DD), Galpin s.n.* (BOL).

—2527 (Rustenburg): Magaliesrivier, (—DC), *Burke & Zeyher 366* (SAM).

—2528 (Pretoria): Pretoria, (—CA), *McLea 3078* (BM, BOL, MO, SAM).

—2529 (Witbank): Loskopdam, (—AD), *Rogers 24278* (PRE).

—2530 (Lydenburg): 20 km N. of Sabie on road to Graskop, (—BB), *Codd & de Winter 3312* (PRE); 17 km from Brondal on the road to Witrivier, (—BD), *Buitendag 732* (NBG); *Coetzer 779* (PRE); *Waterval Boven, (—CB), Roberts s.n.* (J); *Thornicroft Flora Reserve, (—DB), Venter 9121* (LYD).

—2531 (Komatipoort): Bushman Rock Hotel, (—AA), *Schrire 662* (NH); *Witrivier Kloof, Pretoriakop, (—AC), Gillett 1033* (PRE); *Eerste Geluk No.6, (—CA), Stirton 1750* (MO, PRE); *Barberton, (—CC), Edwards 629* (NU).

—2628 (Johannesburg): Johannesburg, (—AA), *Leendertz 6093* (PRE); *Benoni, (—AB), Taut 177* (C); *Heidelberg, (—AD), Acocks 20853* (PRE); *Struben's Valley, (—BB), Mogg 22387* (J).

—2630 (Carolina): Athole Research Station, (—CB), *Norval 78* (PRE); *Iswepe, (—DC), Sidey 1499* (MO).

—2631 (Mbabane): Forbes Reef, (—AA), *Prosser 1961* (PRE); *Mbabane, (—AC), Bayliss 1770* (G, MO, SAM); *Bremersdorp, (—AD), Bolus 11787* (BOL, PRE); *Usutu Forest, (—CA), Dlamini s.n.* (NBG); *Hlatikulu, (—CD), Compton 29252* (NBG, PRE).

—2729 (Volksrust): Newcastle, (—DD), *Bayliss 1703* (G, MO, SAM).

—2730 (Vryheid): Kwa-Mandlangampisi, Groothoek Farm, (—BA),

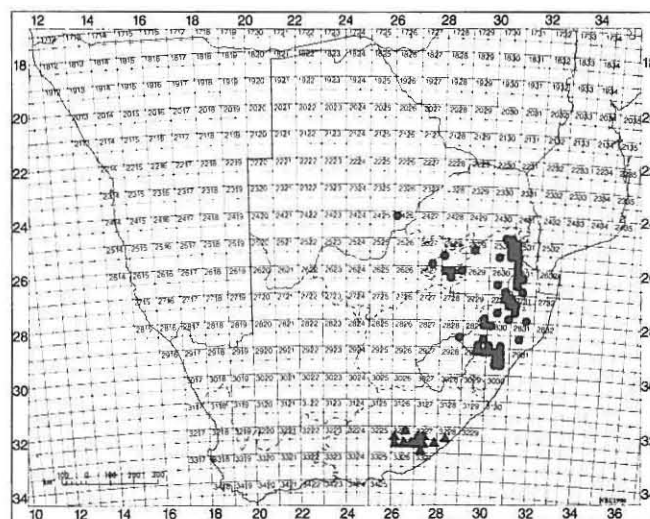


Figure 3 Recorded distribution of *A. speciosum* (s) and *A. robustum* (l).

Du Toit 21 & 84 (PRE); *Piet Retief, (—BB), Galpin 9620* (PRE); *Paulpietersburg, (—BD), Germishuizen 2370* (PRE); *Utrecht, Donderhoek, (—CB), Devenish 957* (PRE); 23 km from Vryheid on the road to Kranskop, (—DD), *Schrire 1524* (NH).

—2731 (Louwsberg): Itala Nature Reserve, (—AC), *Brown & Shapiro 304* (PRE); 11 km from Kongolwane on the Rd. to Louwsberg, (—CA), *Schrire 1132* (NH); *Germishuizen 2183* (MO, PRE); *Non-goma, (—DC), Gerstner 4658* (PRE, SAM).

—2828 (Bethlehem): Bergville, Royal Natal National Park, (—DB), *Trauseld 103* (PRE).

—2829 (Harrismith): Fort Mistake, (—BB), *Shirlet 134* (NU); *Pepworth, Ladysmith, (—DB), Edwards 629* (NU); *Winterton, (—DC), Rayburn s.n.* (NH).

—2830 (Dundee): hill above Dundee Reservoir, (—AA), *Edwards 1087* (NU); *Weenen, (—CC), Sutherland s.n.* (TCD); *Greytown, (—DC), Stirton 1320* (PRE).

—2831 (Nkandla): Melmoth, (—CB) *Strey 11288* (NH).

—2929 (Underberg): Tabamhlope, (—BA), *Wyllies s.n.* (BM, MO, PRE); *Gordon-Gray 5053* (NU); *Griffins Hill, Estcourt, (—BB), Marsh 81* (PRE).

—2930 (Pietermaritzburg): Mooirivier, Meteor Ridge, (—AA), *Mogg 3237* (PRE); *Rietvlei, Greenwich Farm, (—AB), Fry 2782* (PRE); *Albert Falls, (—AD), Commins 298* (NU); *Greytown, (—BA), Wylie s.n.* (MO); *New Hanover, (—BC), Moll 1964* (NU, PRE); *Bayer 6 & 7* (NU); *Ferncliff, Pietermaritzburg, (—CB), Strey 11288* (NH); *Table Mountain, (—DA), Hilliard 3993* (NU).

3. *Argyrolobium baptisioides* (E.Mey.) Walp. in *Linnaea* 13: 506 (1839); Walp.: 630 (1843); Harv.: 69 (1862). Type: Katberg, in grassland, 3500–4000', *Drège s.n.* (P!, lecto. selected here; BM!, K!, G!, MO!, OXF!, S!, TCD!, isolecto.).

Chasmone baptisioides E.Mey.: 71 (1836).

Argyrolobium sandersonii Harv.: 594 (1862), *synon. nov.*; Wood: 228 (1902).

Type: Natal, flats between Field's and Botha's Hills, *J. Sanderson 99* (TCD!, lecto. selected here; K!, PRE!, isolecto.).

Argyrolobium sutherlandii Harv.: 594 (1862), *synon. nov.* Type: Natal, near Pietermaritzburg, 2–3000', *Dr. Sutherland s.n.* (TCD!, lecto.; iso. K!, isolecto.).

Argyrolobium speciosum Eckl. & Zeyh. var. *glaberrimum* Harv.: 594 (1862), *synon. nov.* Type: Kreili's Country, *H. Bowker 280* (TCD!, lecto. selected here).

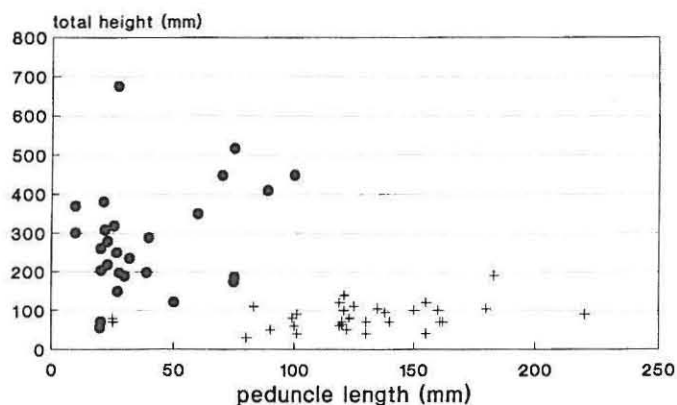


Figure 2 Scattergram of peduncle length against plant height for *A. speciosum* (+) and *A. robustum* (l).



Figure 4 *Argyrolobium baptisioides*. A. flowering branch (bar = 20 mm); B. standard, abaxial surface (bar = 2 mm); C. standard, lateral view (bar = 2 mm); D. wing (bar = 2 mm); E. keel (bar = 2 mm); F. calyx (bar = 2 mm); G. androecium (bar = 2 mm); H. leaf (bar = 2 mm). Voucher: Edwards 434.

Argyrobolium comanthum Vogel nom. non rite public. mss. in Hb. Reg. Berol.

Suffrutex, up to 0.7 m tall, erect; stems well branched below, annual, glabrous to densely pilose; lignotuber well developed. *Leaves* glabrous adaxially, sparsely sericeous to pilose abaxially; oblanceolate, elliptic or broadly obovate, 28–45 (–90) × 5–20 (–40) mm, apex acute or rounded, apiculate; petiole 3–8 (–11) mm long, canaliculate; stipules sericeous abaxially, lanceolate to trapezoid, 6–25 × 2–5 mm, base broadly cuneate, apex acute, commonly the basal leaves are reduced to amplexicaule stipules. *Inflorescence* racemose, erect, 5–80-flowered, terminal, often subtended by axillary inflorescences; bracts elliptic to lanceolate, up to 3–14 × 0.5–2.0 mm, bracteoles setaceous to elliptic, 2–10 × 0.5–2.0 mm. *Calyx* sericeous, lateral sinuses 1–3 mm; upper lip 6–10 (–12) mm long, lobes acute, 2–3 mm; lower lip 8–15 mm long, lobes acute, 1–3 mm long. *Corolla* bright to mustard-yellow, becoming black in dried specimens; standard 10–13 × 10–12 mm, obovate, adaxial surface sparsely sericeous, base cuneate, perpendicular to lamina, claw 2–5 mm long; wings obovate to cymbiform, 8–15 × 3.5–5.0 mm, with lunate-lamellate sculpturing in the upper basal and upper central zones, claw vertical, 1.5–3.5 mm long; keel acutely cymbiform, 7–9 × 3–4 mm, claw 2.5–3.0 mm long. *Stamens* monadelphous, sheath split adaxially. *Ovary* oblong 5–7 mm long, style 3–4 mm long. *Fruit* linear, compressed, erect, (30–) 40–60 (–80) × 4.0–5.5 mm, sparsely sericeous. *Seed* 2–3 mm in diameter, slightly compressed (Figure 4).

A. baptisioides has similar flowers to *A. longifolium* in which the standard blade is obovate and its edges are strongly inrolled towards the base. *A. longifolium* is however, tall (up to 1.5 m) with little basal branching. Some forms of *A. baptisioides* are vegetatively similar to *A. robustum* but produce narrow stipules. In addition the latter has suborbicular standard petals.

The profusion of synonyms listed under this species is due to the variability associated with its habit, indumentum and leaf shape. Extensive field work reveals that populations often include broad-leaved, glabrescent and narrow-leaved, pilose individuals. In populations of the Eastern Cape the narrow-leaved, pilose forms predominate. Flowering of the morphs is simultaneous and considerable independent floral variation exists, especially with reference to the width of the standard. Occasional specimens (*Flanagan 569* & *Scully 135*) display peculiar inflorescence structure where the terminal racemes resume vegetative growth at their apices.

Around Camperdown mixed populations of *A. baptisioides* and *A. longifolium* occur and here putative hybrids have been recorded (*Edwards 586*). The contracted flowering period of *A. baptisioides* begins in early spring and only late flowering individuals hybridise with *A. longifolium* which flowers throughout summer. *A. baptisioides* inhabits sourveld areas where grass cover is sparse while *A. longifolium* often occurs where grass cover is dense. Both occur in Ngongoni Veld, Highland Sourveld and Dohne Sourveld. The disjunction of *A. baptisioides* which occurs in the Transkei is a common anomaly in east coast plant taxa (Figure 5). Weimarck (1941) referred to the area as the Kaffraria Interval which he claimed results partly from the inability of the 'Cape element to penetrate xeromorphic biotypes of the Great Fish River Valley'. This explanation is unsatisfactory as the distributional gap occurs to the north of the valley. A plausible explanation is the discontinuity in sandstones for about 600 km in the Transkei (Van Wyk 1990). The southernmost outcrops of Natal Group sandstones occur at Port St. Johns and the northern exposures of the Cape Supergroup occur at Suurburg. The intervening landscape is Karoo Sequence interspersed with dolerite intrusions from which *A. baptisioides* and its allies are absent.

Selected specimens

Without precise locality: *Gerrard & McKen 1067* (TCD); Kreilis County, *Bowker 280* (TCD).

—2930 (Pietermaritzburg): Fort Nottingham Commonage, Lion's

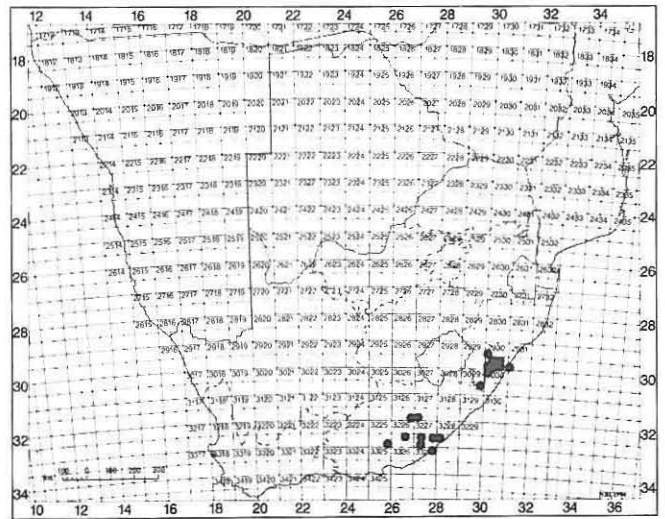


Figure 5 Recorded distribution of *A. baptisioides*.

River, (–AC), *Wright 1621* (E, NU); Pietermaritzburg, (–CB), *Goossens 162* (BM); Krantzklouf, (–CC), *Schlechter 3207* (B, BR, BOL, C, E, G, GRA, PRE); 15km from Thornville to Eston, (–CD), *Stirton 5439* (MO, PRE); Botha's Hill, (–DA), *Wood s.n.* (G, GRA); 20 km S of Shongweni, (–DC), *Edwards 531*, *Edwards 586* (NU); flats between Field's and Botha's Hills, (–DC), *Sanderson 99* (S, TCD). —2931 (Stanger): Durban, (–CC), *Rogers 1631* (BOL). —3029 (Kokstad): Harding, (–DB), *Oliver 38* (NH). —3030 (Port Shepstone): Ixopo, (–AA), *Mogg 2341* (PRE). —3126 (Queenstown): Queenstown, (–DD), *Cooper 349* (BOL, TCD). —3127 (Lady Frere): Tsomo River, (–DC), *Bowker & Bowker 803* (GRA, TCD). —3225 (Somerset East): head of Bergmeu's Kloof, Stockenstrom, (–DD), *Scully 135* (PRE). —3226 (Fort Beaufort): Katberg, (–DA), *Drège* (BM, K, G, MO, OXF, P, S, TCD). —3227 (Stutterheim): Pirie, (–CB), *Flanagan 2141* (MO, SAM); King William's Town, (–CD), *Ranger 31* (PRE); Komgha, (–DB), *Flanagan 569* (BOL, G, GRA, PRE, SAM). —3228 (Butterworth): Kentani, (–CA), *Pegler 121* (GRA, PRE). —3327 (Peddie): East London, (–BB), *Rattray 682* (GRA).

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